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Abstract

Many people recognize American Sign Language (ASL) as the first and native language of the Deaf community. However, traditional educational programs have focused only on the development of English language in its spoken, written, and perhaps signed forms. In recent years, the bilingual/bicultural philosophy of deaf education, which recognizes ASL and English as equal and viable languages for the instruction of deaf children, has come to light. The integration of this approach into developmental and educational programs for deaf children has tremendous implications for language specialists and educators with regard to the development and assessment of the language abilities of deaf students. The purpose of this paper is to review the literature relevant to the assessment of language for deaf children, from a historical perspective and with respect to the bilingual/bicultural approach to deaf education. This review points unequivocally to the fact that there is a strong need for a tool for assessing the language skills of bilingual deaf children.

Introduction

Over the years, the issue of language competence has dominated the field of education of deaf children. Numerous methods have been developed to assess the language skills of deaf children. Within the realm of standardized assessment tools, numerous tests of English have been developed. Tools to evaluate an individuals' competence in American Sign Language (ASL) have been predominantly informal checklists and descriptive assessments.

Over the past decade, there has been an increasing interest in bilingual/bicultural education for deaf students: a philosophy which incorporates ASL and English in the education of deaf students and fosters an understanding and appreciation of deaf culture in addition to the cultural norms of the society at large (Johnson, Liddell & Erting, 1989; Livingston, 1986; Strong, 1988). The increasing popularity of this philosophy in educational programs for the deaf has highlighted the need for an assessment tool that provides a systematic assessment of an individuals' competence in English and in ASL.

The purpose of this paper is to review the literature on the issues relevant to the assessment of language for deaf children. The following pages contain an overview of the research in a number of relevant areas – deafness and language development, bilingualism, dimensions of language, acquisition of English and ASL, and the principles of language assessment. Recommendations for further development in this area are also provided.

Review of the Literature

Deafness, Language and Education

The issue of language of deaf children has been debated historically by the educators of these children. The controversy of oral versus manual language has continued since the Milan Conference of the Educators of the Deaf in 1880 (Lane, 1992). At that time, a decision was made that all deaf students should be educated through the use of oral language. Later, in the mid 1900s, it was recognized that an aural/oral approach was not appropriate for all deaf children. Thus came the introduction of total communication (as discussed in Stewart, 1982). This philosophy proposed that children should have the opportunity to be exposed to all forms of communication – oral language through speechreading and auditory/spoken modalities, manual language through sign language, written language and gestures. The underlying belief of this philosophy was that if children were exposed to various forms of communication, they would then use the mode that was best suited to their needs. With the introduction of total communication came the invention of various systems of manually coded English which generally paired a manual sign with a spoken word to present a "visual" form of the language (Quigley & Paul, 1989). Although the original intent of this philosophy was to include ASL, in practice, manually coded English is generally the only form of signing used with this approach (Stewart, 1982).

The primary goal of oral and total communication programs is to develop functional speech and English literacy skills in deaf children. Livingston (1986) proposed an alternative view indicating that in addition to literacy skills in English, the goal of education for deaf children should include "thinking and learning through the

development of meaning-making and meaning sharing capacities" (p. 21). This author encouraged the use of American Sign Language (ASL) as it is "the linguistic symbol system that appears to best convey meaning for deaf students" (Livingston,. 1986, p. 22). An approach that recognizes ASL as the first language of deaf people and as a vehicle for the instruction of English as a second language is consistent with a bilingual/bicultural philosophy for deaf education.

Individuals who advocate the bilingual/bicultural philosophy for language development and deaf education point to the historically dismal outcomes of deaf education using an English-based approach. Johnson, Liddell, and Erting (1989) stated that the fact that deaf students have consistently fallen behind their hearing peers on measures of academic achievement suggests a need for change. They, and others (Cummins & Danesi, 1990; Davies, 1991; Livingston, 1986; Strong, 1988) proposed a model which encourages deaf children to develop ASL as a native language and English, in its written form and in its spoken form if possible, as a second language. This model for language development looks to the literature on bilingualism for support.

In the late 1950s, a virtually non-existent area of research, the linguistics of ASL, was introduced (Stokoe, 1960). Through his intensive studies, Stokoe demonstrated that ASL was indeed a language; that is, it met all of the linguistic criteria necessary to be recognized as such. Subsequent studies have verified Stokoe's findings (as discussed in Klima & Bellugi, 1979 and Wilbur, 1979). Thus, in recent decades, a strong push has come for the recognition of ASL as the natural language of the deaf and for the use of ASL in the education of deaf children (Cummins & Danesi, 1990). Even before research validated ASL as a bona fide language, it was recognized as a vital link for the Deaf community. The social and cultural existence of the Deaf community has always been expressed by and captured in the natural language of the Deaf – American Sign Language (Lane, 1992).

Promoting and emphasizing **spoken** English as a primary language is not a realistic, nor desirable, goal for many deaf children. "The spoken form of English does not provide deaf students with full access to the language" (Supalla, 1980, p. #). However, Quigley and Kretschmer (1982, p. xi) have asserted "that the primary goal of education for typical, prelingually deaf children should be literacy." Though this claim may be disputed (Livingston, 1986), the importance of English literacy is recognized by deaf and hearing people alike. As English is the majority language in North America, and is also the language most often used by the hearing families of deaf children, English literacy is indeed important for the social, academic, and vocational success of deaf individuals (Neuroth-Gimbrone & Logiodice, 1992).

Deaf children with deaf parents have access to ASL as a native language and are exposed to this language in a similar manner to hearing children developing a spoken language. However, over 90 percent of deaf children are born to hearing parents. As most hearing parents are not familiar with sign language, and most deaf children lack the ability to acquire language through the traditional auditory channel, the majority of deaf children do not have the linguistic exposure they require to develop language naturally (Meier, 1991). Thus, it is important to consider the nature of language, both English and ASL, in order to understand further the processes involved in the language development of deaf children.

Bilingualism

Considering the complexity involved in understanding and effectively using language, it is an amazing phenomenon that there are more people in the world who are bilingual than are monolingual (McLaughlin, 1978). The literature in this area demonstrates a certain amount of disagreement with regards to what constitutes bilingualism. The degree of bilingualism varies from having knowledge of some words in another language to having native-like control of both languages (McLaughlin, 1978). Bilingualism can be viewed as a continuum among individuals and among dimensions of the languages.

Bilingualism, by definition, refers to the use of two languages. As such, most deaf people are bilingual (Grosjean, 1992). Deaf persons typically use English, written and/or spoken, on a daily basis through their encounters with hearing people and the hearing world. In addition, members of the Deaf community use ASL for communicating with their peers and families. "The bilingualism present in the Deaf community is a form of minority language bilingualism in which the members of the Deaf community acquire and use both the minority language (sign language) and the majority language in its written form and sometimes in its spoken or even signed form" (Grosjean, 1992, p. 311).

Grosjean (1992) compared and contrasted deaf bilinguals with hearing bilinguals. Both groups of bilinguals demonstrate social, cultural, and linguistic diversity. In addition, with hearing and deaf

bilinguals, the use of either language fluctuates along the bilingual continuum depending upon the situation. Grosjean also commented on some of the characteristics unique to deaf bilinguals.

- Until recently, deaf people have not been recognized as being bilingual (perhaps a result of the lack of recognition of ASL as an official language).
- By the very nature of their deafness, deaf persons continue to be bilingual from generation to generation.
- Certain aspects of the majority language (i.e., speech) may not be acquired by some bilingual deaf persons.
- The patterns of language use with bimodal bilingualism (i.e., visual/gestural language and aural/oral/written language) appear to be more complex than with spoken language bilingualism.

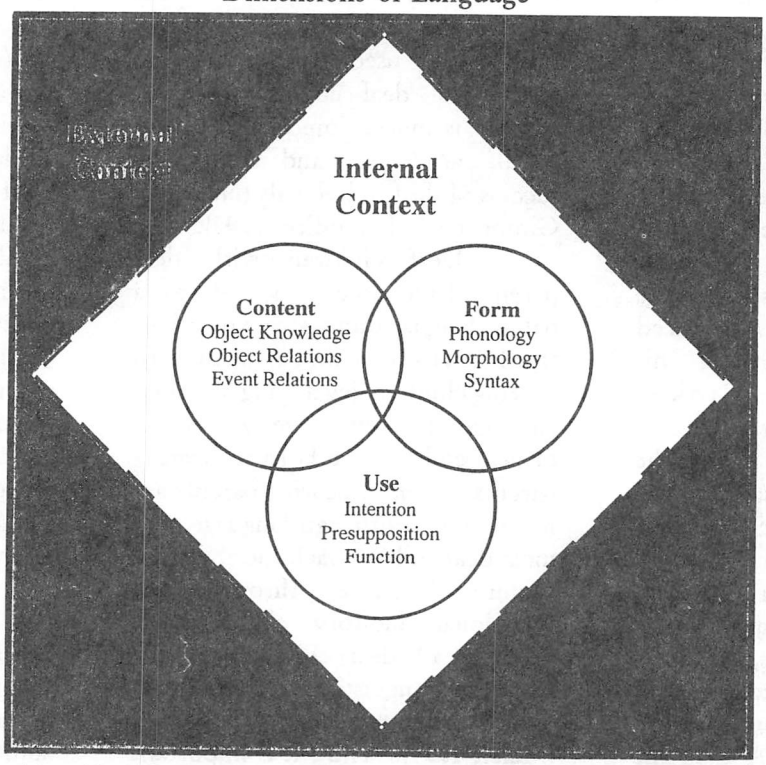
Cummins (1980) discussed a theory of bilingual language development which he illustrated through his model of Common Underlying Proficiency. In this model, basic interpersonal communication skills (BICS) develop spontaneously in the first language, given unrestricted exposure to this language. Cognitive/academic language proficiency (CALP) developed in the first language enhances the development of these skills in a second language. A number of other theories of bilingualism reinforce the concepts illustrated by Cummins (e.g., threshold hypothesis, developmental interdependence theory, as cited in Cummins (1978). This model may be applied to the case of deaf bilingualism, with ASL and English as the first and second languages respectively. Given adequate exposure and experience with ASL at an early age, a child would develop BICS and then CALP in this language. This proficiency could then be used as a basis for fostering development of English.

In order for the deaf child to acquire mastery of both ASL and English, a bilingual approach to language development and education is essential. The acceptance of this philosophy has tremendous impact for deaf individuals, their families and educators (for a discussion of these issues see Dubé, 1995). Examination of a child's skills in either language provides an opportunity to explore the child's strengths and challenges with respect to ASL and English. Thus it is important to consider the nature of both languages in some detail.

Dimensions of Language

"A language is a code whereby ideas about the world are expressed through a conventional system of arbitrary signals for

Figure 1
Dimensions of Language



Adapted from Bloom & Lahey, 1978

communication" (Bloom & Lahey, 1978, p. 4). Language can be considered along three interactive but distinct dimensions: language content, form and use (Bloom & Lahey, 1978; Lahey, 1988). Figure 1 depicts the relationship among these dimensions.

Language content is commonly defined as the semantics of the language, including the lexicon and the interaction among lexical items ref. It can be viewed in terms of object knowledge, objects relations, and event relations. Content extends beyond the topics idiosyncratic to an individual or context; it defines the scope of language as it is shared globally.

Language form considers the underlying rules governing the structure of the language. More specifically, phonology, morphology and syntax are the rule-based systems involving units which are combined in a relative hierarchy.

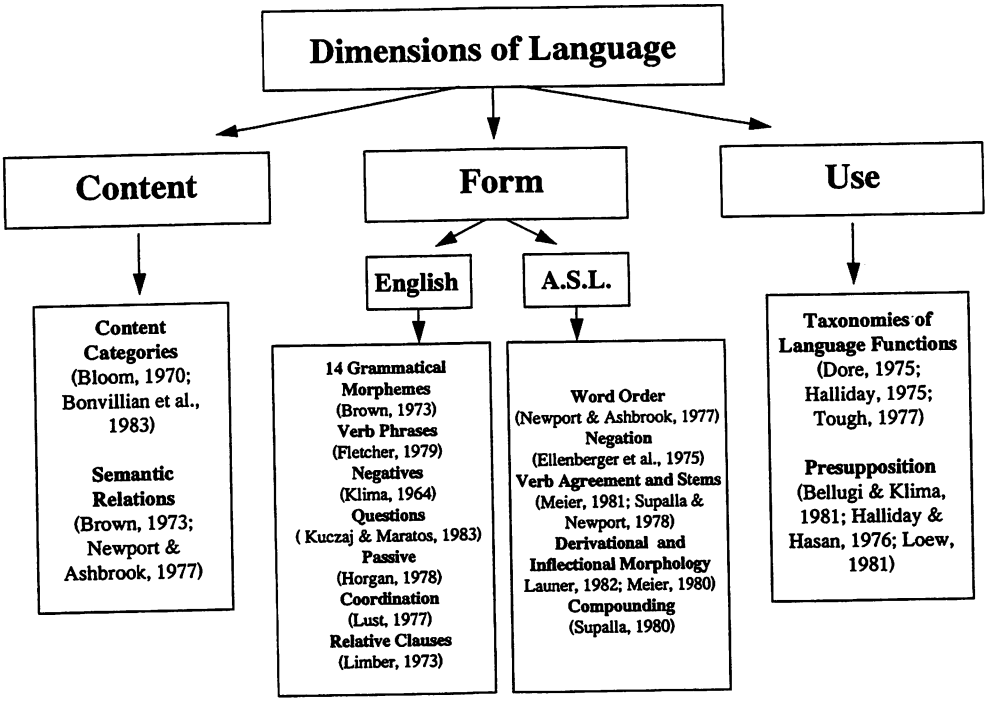
The scope of language use, or pragmatics, is three-fold. It defines the functions of language in terms of intrapersonal and interpersonal communication, the manner in which the information in a message accomplishes the goals set forth by the speaker, and the social rules of communicative interactions (Bloom & Lahey, 1978).

Acquisition of Language

Studies of the acquisition of language have been conducted in most of the languages known to humankind. Dating back to the early twentieth century, research on acquisition is available for a number of different languages (Slobin, 1985). Studies of language acquisition are primarily descriptive and longitudinal in nature and involve the transcription and categorization of the linguistic output of a single child or a small group of children. de Villiers and de Villiers (1985) and Miller (1981) present comprehensive reviews of the acquisition information available for English. Newport and Meier (1985) and Wilbur (1979) present a similar compilation for ASL.

The present discussion will consider information on language acquisition within Bloom and Lahey's framework (date) of the dimensions of language. The concepts presented under the dimensions of content and use can be considered cross-linguistically. Thus, even though most of this information stems from research with English-speaking subjects, the aspects presented are applicable to ASL as well. The structural forms of English and ASL are unique and will therefore be considered independently. Some of the relevant research on of the three dimensions of language are presented in Figure 2. It should be noted that, for discussion purposes, the dimensions of language

Figure 2
Research on Language Acquisition



are considered separately. However, in the production of language, the dimensions interact in a holistic manner within the context of the social and communicative setting.

Language Content

The majority of information available in the area of content has focused on early language development, particularly the one and two-word level. Pioneering research on content categories and semantic relations evolved from the work of Bloom (1970) and Brown (1973). Complementary research has shown that these categories emerge in essentially the same order for ASL as compared to English (Meier & Newport, 1990; Newport & Ashbrook, 1977). Lahey (1988) discussed a plan for considering these early structures through later language development by considering their interaction with language form and use.

Language Form

English. Much of the research available regarding the form of early language comes from data gathered by Brown and his associates on three young children. Early morphemes (Brown, 1973), negatives (Klima, 1964), and questions (Klima & Bellugi, 1966) are some of the structures described from this database. Considerable research is available concerning the aspects of the morphology and syntax of English, from simple to complex structures.

American Sign Language (ASL). The form of ASL is unique in that it integrates spatial and temporal elements in its morphology. A number of studies describing features of early syntactic and morphological development have been reported (see Figure 2). Similar to the research in English, many of these studies draw from a common group of deaf children, all of whom had deaf parents who used ASL; thus these children learned ASL as a native language. Research on later-developing syntactical structures such as topicalization and clauses is virtually nonexistent (Newport & Meier, 1985).

Language Use

The dimension of language use or pragmatics has received considerable attention over the past twenty years. Chapman (1981) provides a comprehensive review of the existing taxonomies of communicative intent. Similar to language content, many of the taxonomies developed from the research on language use have focused on early language development (Dore, 1975; Halliday, 1975). These taxonomies consider the function of the utterance with respect to context. The research in this areas stems from studies of English. Prinz and Prinz (1985) have studied aspects of discourse function with ASL. Rather than focusing on specific taxonomies, their research examined five aspects of discourse (conversational attention-getting devices; formulating and responding to requests; turn taking; eye contact; and initiation, maintenance and termination of topics).

Another relevant area of language use in discourse is the study of presupposition (Roth & Spekman, 1984), which considers the speakers' ability to take the perspective of the listener. This area is particularly useful in studying the pragmatics of narrative stories in language.

Language Assessment

In the domain of language, assessment refers to the process of "describing a child's language behavior for the purpose of identifying a problem, planning intervention, or estimating prognosis" (Lahey, 1988, p. 122). The purpose of assessing the language skills of any individual is: to determine the level of language functioning of the individual; to ascertain if a delay or deviance in language functioning is present; and to describe the language abilities of the individual, including strengths and deficit areas. Information gathered through the assessment process is subsequently used for programming and placement decisions.

The optimal approach to language assessment has been an area of controversy for many years. Though some individuals strongly advocate for the use of standardized assessment instruments to assist in making clinical judgments (Wiig & Semel, 1984), others have argued in favor of using descriptive measures (Muma, 1986). In general, a combination of these two approaches is suggested. Such an approach combines the use of standardized tests, as appropriate, with descriptive analysis and low structured observations (Lahey, 1988).

Models of Language Assessment

Bloom and Lahey (1978) proposed a model for language assessment which complements their theory of the dimensions of language content, form, and use. This model provides a framework for considering language holistically as well as examining the component parts of language. Lahey (1988) suggested an approach to assessment which relies heavily on information gathered through direct observation of the child by a skilled evaluator.

A means for eliciting information for a language assessment which would be consistent with the model presented by Bloom and Lahey (date) and discussed in detail by Lahey (1988) is a narrative approach. A narrative

framework allows individuals to use their own language to create a story involving characters, settings, and plots (Bruner, 1986) or to retell a story that they have heard or viewed (Johnston, 1982). An example of the use of the latter framework in language assessment is the *Bus Test* (Renfrew, 1980). Commonly, the elicited stories are transcribed and analyzed following a model of story grammar (Johnston, 1982). However, the language sample generated through a narrative story could also be viewed as an indicator of the individual's competency with the content, form, and use of a language (Lahey, 1988).

An alternative to a narrative assessment is the widely used discrete point approach to assessment which relies heavily on the use of standardized instruments (Damico, 1991). Damico described this methodology as prescriptive, quantitative, and structurally oriented. He suggested this approach stresses structure over function and group norms over individual differences. Thus, Damico indicated that this approach to language assessment is lacking in a number of areas. It does not consider all dimensions of language and does not take into account sociocultural influences. He also questioned the discriminant validity of this approach.

Concerns with Assessment

As discussed above, controversy exists surrounding the issue of approaches to language assessment. In addition, general concerns about assessment and measurement practices also warrant consideration in language assessment. The *Principles of Fair Student Assessment Practices for Education in Canada* (1993) were developed in an attempt to address some of these concerns. The section concerning "Assessments Produced External to the Classroom" discussed issues such

Table 1
Language Tests Designed for Deaf and Hard of Hearing Students

Test	Reference	Normative Sample*	Intended Language	Scope of the Test	Reliability Information	Validity Information
Grammatical Analysis of Elicited Language (GAEL) - Pre-sentence (P), Simple Sentence (S), Complex Sentence (C)	Moog, Kozak, & Geers (1983); Moog & Geers (1979, 1980)	P: 150 children (3-0 to 5-11 years) S: 500 children (5-0 to 9-0 years) C: 270 children (8-0 to 11-11 years) (TC and oral programs)	Signed or spoken English	P: Readiness skills, single words, word combinations S and C: Grammatical categories (English)	P: Test-retest 0.93-0.97 ** S: Test-retest 0.91-0.96 ** Rater reliability 0.77-1.00 ** C: Test-retest 0.95-0.96 **	P: 0.80-0.87 ** S: 0.81-0.87 **(correlations with measures of expressive language for concurrent validity) C: 0.43-0.68; 0.84-0.87 ** (correlations with measures of receptive and expressive language respectively for concurrent validity)
Test of Expressive Language Abilities (TEXLA)	Bunch (1981)	65 children (7 to 11 years) (Residential programs)	Signed or spoken English	Production of nouns, pronouns, adjectives, prepositions, and verb tenses (English)	Internal consistency 0.99 (Spearman-Brown Equal Length Correlation Coefficient)	Content validity: consultation with a panel of experts Concurrent validity: 0.89 ** correlation with the TERLA; 0.64-0.74 ** correlation with a measure of receptive vocabulary
Test of Receptive Language Abilities (TERLA)	Bunch (1981)	92 children (6 to 12 years) (Residential programs)	Signed or spoken English	Comprehension of nouns, pronouns, adjectives, prepositions, and verb tenses (English)	Internal consistency 0.96 (Spearman-Brown Equal Length Correlation Coefficient)	Content validity: same as TEXLA Concurrent validity: 0.89 ** correlation with the TEXLA; 0.67-0.71 ** correlation with a measure of receptive vocabulary
Rhode Island Test of Language Structure (RITLS)	Engen & Engen (1983)	364 children ages 6 to 18 years (Residential programs)	Signed or spoken English	Comprehension of simple and complex English sentence patterns	Internal Consistency 0.89 (Kruder-Richardson 20)	Discussion of content and construct validity (see RITLS manual p. 26-32)
Test of Syntactic Ability (TSA)	Quigley, Steinkamp, Power & Jones (1978)	411 children ages 10 to 18 years (Day and residential programs)	Written English	Screening test and diagnostic battery to examine all areas of English syntax	Internal Consistency 0.93-0.98 (Kruder-Richardson 20 for each structure) Test-retest: 0.62-0.83	Concurrent validity: 0.29 to 0.42 ** correlation with non-verbal IQ Point biserial over 0.40 for 88% of items
Test of Early Reading Abilities-Deaf or Hard of Hearing (TERA-D/HH)	Reid, Hresko, Hammill & Wiltshire (1991)	1146 children ages 3-0 to 13-11 years (Primarily TC programs	Administered in signed or spoken English or ASL	Early reading skills (English)	Internal consistency 0.94, 0.95 (Cronbach's alpha - forms A & B) Test-retest: 0.83 **	Discussion of content, criterion, construct and item validity
Signed Language Development Checklist (draft version)	Mounty, (1993)	None as of yet	ASL	Grammar of ASL	Information not provided	Information not provided

* Sample of Deaf/Hearing Impaired subjects only
** Pearson Product Moment Correlation Coefficient

as developing and selecting methods for assessment, collecting and interpreting assessment information, informing students being assessed and their parents/guardians of the assessment results and implementing mandated assessment programs. These guidelines deal primarily with the issue of standardized assessment procedures. They provide information for test users concerning the importance of selecting appropriate tools, the appropriateness of the normative population and the standardization procedures of the instrument in relation to the individual to be assessed, and proper administration of the assessment tool.

Also within the arena of standardized testing, the issue of validity is ever-present. Many of the instruments used for language assessment have been called into question with regard to their lack of validity (Muma, Lubinski, & Pierce, 1982). In particular, the construct validity of some language instruments has been questioned (Muma, 1986). In terms of validating an assessment instrument, Messick (1980, p. 1015) suggested that "it [construct validity] is the basic meaning of validity". He also suggeseds an alternative view for examining validity which incorporates the following aspects: content relevance, content coverage, criterion relatedness, and interpretive meaningfulness. Messick stressed the need for consequential validation as an important aspect of the validity process. Thus it is important for both developers and users of tests to be cognizant of the consequences resulting from the use of any testing instrument.

Language Assessment of Deaf Children

A model for language assessment for deaf children must take into account the primary language of the child. Consistent with the bilingual/bicultural approach to deaf education, many deaf children develop ASL as their first language and English as a second language. These children should not be viewed as language deficient. An assessment approach which considers only performance in English may well do that. Using the model for assessment described above, the language performance of deaf children in ASL and in English can be evaluated by comparing it to developmental patterns found in the literature.

Ling (1976), Kretschmer and Kretschmer (1978) and Russell, Quigley, Power, and Jones (1976) have provided considerable information regarding the assessment of English skills in deaf children. Over the years, instruments have been developed and standardized for the purpose of assessing the language skills of deaf children. Rodda and Groves (1987) provided a comprehensive list of the tests of language and communication skills developed for deaf students. Quigley and Paul (1994) presented a more recent discussion of some of the available measures. Table 1 presents a summary of some of the commonly used instruments.

As Table 1 indicates, most of the language assessment tools were designed to provide information regarding the English language skills of deaf children. The normative samples used for these tests included students involved in education programs with either an oral or total communication philosophy. For children who are acquiring ASL as a first language and English as a second language, the existing assessment tools may not provide sufficient relevant information. The pool of instruments for assessing ASL is extremely limited.

Bilingual Language Assessment

The need for an assessment procedure which accurately reflect the communicative abilities of individuals from different linguistic and cultural backgrounds has been well documented (Erickson, 1981). In addition to the usual difficulties associated with validly assessing communication skills, cultural factors add another dimension to the evaluation process with bilingual individuals. Bias in the form of cultural differences and first and second language proficiency may dramatically influence the outcome of an assessment. Traditional, discreet point assessment procedures may only serve to accentuate bias in evaluation and thus unfairly disadvantage individuals with diverse cultural or linguistic backgrounds. Descriptive assessment approaches may provide a more accurate picture of an individuals' true language and communication abilities. " Such an approach will more effectively limit the bias inherent in the communicative assessment of limited English proficiency students and will enable the evaluator to differentiate between language-learning impaired students versus normal second-language learners or individuals from culturally diverse backgrounds" (Damico, 1991, p. 177).

Conclusions about language assessment approaches

In light of the comments discussed above, it is apparent that an approach to language assessment must be valid and relevant, regardless of the language in question (i.e., ASL or English). An appropriate assessment infers that the information gathered during this process is relevant not only to the individual being assessed, but also to the language acquisition literature with which the individual's performance is compared. The

model for assessment proposed by Bloom and Lahey (1978) presents a venue for examining language holistically. Assessment information gathered in accordance with this model thus lends itself to examination with existing literature about the acquisition patterns of language content, form, and use.

Summary

The review of the literature relevant to language assessment of deaf children leads to several postulations.

- Bilingual/bicultural education of deaf students provides an opportunity for these children to develop competency in ASL and English while fostering an understanding and respect for cultural differences.
- The available literature on language acquisition of ASL and English lends itself to the formulation of a schema of developmental patterns based on a model of language content, form, and use.
- The need exists for a means for assessing a child's competence in both ASL and English.
- An instrument designed to assess language competency should be based on a framework which considers an individual's naturalistic production of language, rather than structured responses to a limited set of stimuli developed a priori.
- An instrument designed for the purposes of assessing an individual's linguistic competency should conform to the rigors of measurement theory (i.e., validity, reliability, and responsiveness).

An examination of these postulations provides an important direction for future research in the area of language development and deafness. There is an obvious need for a means to address the issue of language assessment of deaf children, with respect to competency in ASL and English. Such an tool should be based on the literature on the acquisition of these two languages. In addition, it should be structured in a manner which considers the natural language production of an individual and yet provides a format which can be consistently applied across individuals and contexts.

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